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EXAMINER

PATEL, GAUTAM

ART UNIT PAPER NUMBER

2655

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12

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/515,101

Applicant(s)

SEO, JIN-GYO

Examiner

Gautam R. Patel

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,5-8 and 10-57 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25,28-30,43-47 and 56 is/are allowed.
- 6) ☒ Claim(s) 1,5-8,10-24,26,27,31-42,48-55 and 57 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Response to Amendment***

1. This is in response to amendment filed on 6-3-03 ( Paper # 11).
2. Claims 1 and 5-57 remain for examination.
3. Applicant's arguments regarding objection of claims 33-34 have been fully considered and objection of claims 33-34 has been **withdrawn**.

***Claim Rejections - 35 U.S.C. §102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. ' 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1 and 7-8, 10-11, 24, 31, 33, 38-39 and 42 are rejected under 35 U.S.C. §102(e) as being anticipated by Nagano, US. patent 6,222,815 (hereafter Nagano).

As to claim 1, Nagano discloses the invention as claimed [see Figs. 1-4], including generating a periodic synchronization signal and controlling the power of the laser diode comprising the steps of:

generating a periodic synchronization signal [signal s3] [col. 4, lines 30-33]; and  
controlling the power of the laser diode in synchronism with the synchronization signal by:

sampling the difference [sample and hold circuit] between the level of the laser light and the reference level to produce a sampled difference,

calculating an average of a predetermined number of the sampled difference to produce an average compared result [output of LPF 8], and controlling the power level

of the laser diode according to the average compared result [col. 3, line 53 to col. 4, line 29].

5. As to claim 7, Nagano discloses:

the disc is a digital versatile disc (DVD) [col. 1, lines 7-17], and the synchronization signal is obtained by dividing a clock signal required to drive the DVD by a ratio [ratio of 3T to 11T] [col. 8, 33-56].

NOTE: Nagano discloses his power control system can work with DVD and also with write once or read only memory [ROM] techniques such as [CD-R] [CD-R is read only memory]. Therefore by definition his system can also inherently work with DVD-ROM.

6. As to claim 8, Nagano discloses:

varying the division ratio [col. 3, line 53 to col. 4, line 29]. As 1 to 11 to 3 to 11.

7. As to claim 10, Nagano discloses:

the synchronization signal is obtained by dividing a clock signal required to drive the disc by a ratio [ratio of 11 to 1] [col. 1, lines 45-59].

8. As to claim 11, Nagano discloses:

varying the division ratio [col. 1, lines 45-59]. As 1 to 11 to 3 to 11.

9. As to claims 24 and 42, Nagano discloses:

adjusting the reference level based upon a read mode, a record mode and an erase mode for the disc [col. 3, line 53 to col. 4, line 29].

NOTE: read mode record mode and erase mode are inherently present in these kind of power control operations.

10. As to claims 31 and 33 Nagano discloses:

sampling the counted result;

averaging a predetermined number of the sampled counted results to determine an average value; and

latching the average value in accordance with the synchronization signal, to determine the latched power signal [col. 3, line 53 to col. 4, line 29].

11. As to claim 38, it is an apparatus claim corresponding to claim 1 and it is therefore rejected for the same reasons set forth in the rejection of claim 1, supra.

12. As to claim 39 Nagano discloses:

a detector [fig.1, unit 3 inherently has detector] which detects the light reflected from the disc, to generate a detected power level of the laser diode;

power signal circuit [fig.1, unit 4] which generates a power signal in accordance with the detected power level; and

an automatic power controller [fig. 1, unit 11, ALPC] which latches the power signal in synchronism with the synchronization signal, to generate the control signal [col. 3, line 53 to col. 4, line 29].

13. Claims 35 and 53 are rejected under 35 U.S.C. ' 102(e) as being anticipated by Aoki, US. patent 5,414,692 (hereafter Aoki).

Aoki discloses detecting level of power and controlling the power of laser in non-effective area comprising steps of:

detecting a level of the power of the laser diode reflected from the disc;

controlling the power of the laser diode only at non-effective data areas of the disc in accordance with the detected power level of the laser diode [col. 1, lines 29-52, especially lines 49-53].

14. As to claim 53, it is an apparatus claim corresponding to the method of claim 35 and is rejected for the similar reasons set forth in the rejection of claim 35.

***Claim Rejections - 35 U.S.C. §103***

15. The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 5-6, 22, 27, 32, 34, 36-37, 41, 48, 50, 54-55 are rejected under 35 U.S.C. §103(a) as being unpatentable over Nagano as applied to claims 1 and 7-8, 10-11, 24, 31, 33, 38-39 and 42 above and in view of Aoki.

As to claim 5, Nagano discloses all of the above steps including light being reflected from these sectors and power being control from these reflections with help of synchronization signal. Nagano does not specifically disclose well known details of the sector format, specifically areas like mirror and gap. However, it is well known in the art that disc have areas like mirror and gap inherently present for proper operation of the disc. Aoki clearly discloses these are well known concepts in the art [see fig. 4; Aoki]. Aoki discloses:

the disc is a (CD-ROM) [col. 1, lines 5-12], and the synchronization signal is a mirror signal indicating a mirror area of the CD-ROM [col. 1, lines 29-53]. Both Nagano and Aoki are interested in controlling the laser power in most efficient way from the reflection of the surface. Both Nagano and Aoki discloses optical recording medium with reflective surfaces. Both are taking these signals to control the power.

Therefore, it would have been obvious to provide the system of Nagano with details of the disc layout and associated details as taught by Aoki. The application or use of these layout details as taught by Aoki would have been obvious, because the layout of the disc performs the same function in the same way as the layout of Nagano and is an equivalent element. One of ordinary skill in the art would have recognized that

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the disc layout of Aoki was an equivalent and an obvious alternative to disc layout of Nagano.

NOTE: Nagano discloses his power control system can work with DVD and also with write once or read only memory [ROM] techniques such as [CD-R] [CD-R is read only memory]. Also Aoki discloses that his system works with CD and ROM disk. Therefore by definition his system can also inherently work with DVD-ROM.

17. As to claim 6, Aoki discloses:

the disc is a digital versatile disc-read only memory (DVD-ROM), and the synchronization signal is a gap signal indicating a gap area of the DVD-ROM [col. 1, lines 29-53].

18. As to claim 22, it is rejected for the same reasons set forth in the rejection of claim 5, supra. NOTE: non-effective area is mirror area.

19. As to claims 27, 32, 34, 37, 41, 48, 50 and 55 they are rejected for the same reasons set forth in the rejection of claims 5 and 8, supra.

20. As to claim 36, Nagano discloses:

comparing the detected power level with a reference signal;  
generating a power level signal in accordance with the compared result;  
generating a synchronization signal;  
latching the power level signal in accordance with the synchronization signal to determine a latched power level signal; and  
supplying the latched power level signal to the laser diode to control the power of the laser diode [col. 3, line 53 to col. 4, line 29].

21. As to claim 54, Nagano discloses:

a comparator [fig. 1, unit 7] which compares the detected power level with a reference signal;

a power level generator [fig. 1, unit 9 and 10] which generates a power level signal in accordance with the output of the comparator;

an automatic power controller [fig. 1, unit 11] which latches the power level signal in accordance with a synchronization signal [S3] to determine a latched power level signal; and

a laser diode driver [unit 10] which supplies the latched power level signal to the laser diode to control the power of the laser diode.

22. Claims 12-21, 26, 40, 49, 51 are rejected under 35 U.S.C. ' 103(a) as being unpatentable over Nagano as applied to claims 1, 7-8, 10-11, 24, 31, 33, 38-39 and 42 above, and further in view of Hayashi et al., US. patent 5,146,240 (hereafter Hayashi).

As to claim 12, Nagano discloses, an apparatus for controlling a power of a laser diode emitting laser light on a disc, comprising:

a photo diode [fig. 1, unit 3 inherently has this diode, because Nagano discloses receiving this signal] which receives the laser light reflected by the disc to generate a current signal corresponding to a level of power of the reflected laser light [col. 3, line 53 to col. 4, line 29];

a comparator [fig. 1, unit 7] which outputs an output voltage corresponding to the current signal from the photo diode compares the output voltage with a reference voltage and outputs a binary decision signal which indicates which of the output voltage and the reference voltage is higher [col. 3, line 53 to col. 4, line 29].

Nagano discloses all of the above elements, including automatic laser power controlling means [ALPC] [fig.1, unit 11]. Nagano does not specifically disclose that automatic laser power control is accomplished with the help of an up/down counter and D/A or DAC. However it is well known in art to control laser power with the help of up/down counter and related circuits. The Applicants also has admitted laser power is controlled with help of the up/down counter and related circuits [see fig. 1; Prior Art].



Hayashi clearly discloses that an alternate way to control laser power is also well known in the art [fig. 4; Hayashi]. Hayashi also discloses:

an up/down counter [fig. 4, unit 17] which up/down counts the binary decision signal in accordance with the comparison result of the comparator to generate a count result [col. 5, lines 10-49];

a laser diode driver [fig. 4, unit 22] which controls a level of the power of the laser diode according to the count result of the up/down counter [col. 5, lines 10-49]; and

an automatic power controller (APC) [fig. 4, unit 23] which controls an automatic power control of the laser diode, the APC controller being interposed between the up/down counter and the laser diode driver, the APC controller latching the count result of the up/down counter in synchronism with a periodic synchronization signal [fig. 4, signal S1], and outputting the latch result [fig. 4, unit 21 latches the results] to the laser diode driver [col. 5, line 50 to col. 6, line 12].

Both Nagano and Hayashi are interested in providing automatic power control of the laser in most efficient way. Both are providing these control with slightly different circuits and components to achieve the same exact end result. Both are providing synchronization signals to control the power.

Therefore, it would have been obvious to provide the system of Nagano with automatic laser power controlling means and associated details as taught by Hayashi. The application or use of the automatic laser power controlling means as taught by Hayashi would have been obvious, because the automatic laser power controlling means performs the same function as the automatic laser power controlling means of Nagano's system, and is an equivalent element. One of ordinary skill in the art would have recognized that the automatic laser power controlling means of Hayashi was an equivalent element and an obvious alternative to automatic laser power controlling means of system of Nagano.

23. As to claim 13, Hayashi discloses:

the synchronization signal has a predetermined enable interval [fig. 4, unit 15 provides this], and the APC controller latches the counted result from the up/down counter at an end of the enable interval [col. 5, line 50 to col. 6, line 12].

24. As to claim 14, Hayashi discloses:

the APC controller samples the counted result from the up/down counter during the enable interval, and latches an average of a predetermined number of the sampled counted results [col. 5, line 50 to col. 6, line 12].

25. As to claims 15-21, they are system claims corresponding to claims 5-9 and 7-8 respectively and they are therefore rejected for the same reasons set forth in the rejection of claims 5-9 and 7-8 respectively, supra.

26. As to claim 26, Hayashi discloses:

comparing a level of the power of the laser diode to the reference level;  
up/down counting according to the compared result to determine a counted result;

latching the counted result in accordance with the synchronization signal to determine a latched power signal; and

controlling the power of the laser diode in accordance with the latched power-signal [col. 5, line 10 to col. 6, line 13].

27. As to claim 40, Hayashi discloses:

a comparator [fig. 4, unit 16] which compares the detected power level of the laser diode with a reference level [Vref1]; and

an up/down counter [fig. 4, unit 17] which up/down counts according to the output of the comparator to determine a counted result, wherein the counted result is input as the power signal to the automatic power controller [col. 5, line 10 to col. 6, line 13].

28. As to claims 49, 51 Nagano discloses:

sampling the counted result;  
averaging a predetermined number of the sampled counted results to determine an average value; and  
latching the average value in accordance with the synchronization signal, to determine the latched power signal [col. 3, line 53 to col. 4, line 29].

29. Claim 23 and 57 are rejected under 35 U.S.C. ' 103(a) as being unpatentable over Nagano and Aoki as applied to claims 1 and 5-8, 10-11, 22, 24, 31-39, 41-42, 48, 50 and 53-55 above, and further in view of Hayashi et al., US. patent 5,146,240 (hereafter Hayashi).

As to claim 23, combination of Nagano and Aoki discloses all of the above steps including the step (b) comprises generating the synchronization signal selectively in accordance with a sub automatic power control mode [mirror mode or gap mode] [col. 1, lines 29-53]; and

a sub-average APC mode for the disc.[col. 1, lines 29-53; Aoki].

Combination of Nagano and Aoki does not specifically disclose that automatic laser power control is accomplished with the help of an up/down counter and D/A or DAC. However it is well known in art to control laser power with the help of up/down counter and related circuits. The Applicants also has admitted laser power is controlled by help of the up/down counter and related circuits [see fig. 1; Prior Art]. Hayashi clearly discloses that an alternate way to control laser power is also well known in the art [fig. 4; Hayashi]. Hayashi also discloses a DAC [D/A], unit 21 in fig. 4] and laser power control with the help of the DAC.

All Nagano, Aoki and Hayashi are interested in providing automatic power control of the laser in most efficient way. All are providing these control with slightly different circuits and components to achieve the same exact end result.

Therefore, it would have been obvious to provide the system of Nagano and Aoki with automatic laser power controlling means and associated details as taught by Hayashi. The application or use of the automatic laser power controlling means as taught by Hayashi would have been obvious, because the automatic laser power

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controlling means performs the same function as the automatic laser power controlling means of Nagano and Aoki's system, and is an equivalent element. One of ordinary skill in the art would have recognized that the automatic laser power controlling means of Hayashi was an equivalent element and an obvious alternative to automatic laser power controlling means of system of Nagano and Aoki.

As to rest of the claim Hayashi discloses: an average APC mode [col. 6, lines 13 to col. 7, line 2].

30. As to claim 57, it is rejected for the same reasons set forth in the rejection of claim 23, supra.

Aoki and Hayashi were cited as prior art references in paper no. 10, mailed 3-3-03.

31. Applicant's arguments with respect to claims amended claims 1, 5-8, 10-24, 26-27, 31-34, 36-42, 48-52, 54-55 have been considered but are moot in view of the new grounds of rejection.

32. In the REMARKS, the Applicant argues as follows:

A) That: "Examiner cites Aoki at col. 1, lines 29-52 as anticipating claim 35. However, the cited passage describes a disc format and coding. Thus, Aoki does not describe or suggest a method that includes controlling the power of the laser diode only at non-effective data areas of disc." [page 11-12, last and first para.; REMARKS].

FIRST: The Applicants are correct that Aoki discloses format and coding, however Aoki also clearly discloses a blank region [non-effective data areas] which is test section for controlling the power level of laser beam source.

SECOND: It should also be pointed out that controlling power in this manner is very well known in the art and therefore Aoki shows this in his background art.

THIRD: Same arguments applies to claim 53.

#### **ALLOWABLE SUBJECT MATTER**

33. Claim 25, 28-30, 43-47 and 56 are allowed over the prior art of record.

NOTE: Claims 25, 28-30, 43-47, and 56 are allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a method which includes five steps which includes “adjusting the reference level to five different values for five different and distinct modes”. It is noted that the closest prior art, Nagano (US 6,222,815) shows a similar apparatus which performs these steps and gives a reference voltage and calculates an average of a predetermined number of sampled difference to produce an average result . And Ogasawara et al., (US 6,081,289) also shows averaging four values However Nagano and/or Ogasawara fails to disclose five different reference voltage values for five different modes and adjusting power accordingly as disclosed in claims 25, Similarly “five different up/down counters latching five different values and associated details” are not disclosed by either references, as disclosed in claims 28-30. Similarly “five latches latching five different values and a multiplexer outputting second through fifth value and two comparators” are not disclosed as claimed in claims 43-44 and 56. Similarly claims 45-47 are allowed for the same reasons as claims 28-30 above.

***Other prior art cited***

34. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1. Ogasawara et al. (US. patent 6,081,289) **“Intensity control unit for image forming apparatus”**.
2. Ogasawara et al. (US. patent 5,721,579) “Light intensity controlling ..”.
3. Maenza (US. patent 5,528,577) “Apparatus and method for reading ..”.
- a. Quidort (US. patent 3,943,446) **“Power and modulation control system”**.
4. Hotta et al. (US. patent 4,803,440) “Automatic electric power control circuit”.
5. Yamamoto et al. (US. patent 5,675,600) “Laser diode driver system”.

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35. Applicant's amendment necessitated the new grounds of rejection presented in this office action. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. ' 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. ' 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

**Contact information**

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is (703) 308-7940. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.

The appropriate fax number for the organization (Group 2650) where this application or proceeding is assigned is (703) 872-9314.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Doris To can be reached on (703) 305-4827.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 305-4700 or the group Customer Service section whose telephone number is (703) 306-0377.



Gautam R. Patel  
Patent Examiner  
Group Art Unit 2655

July 26, 2003